

WHAT IS CLAIMED IS:

1. A three-dimensional non-woven fabric, comprising:
at least one first portion formed from semi-molten fibers placed on a surface
of a mold; and
5 at least one second portion formed from semi-molten fibers hanging down
from the at least one first portion in a tangled state, whereby the at least one second portion is
formed in wall-shape, wherein the three-dimensional non-woven fabric is formed by spinning
the semi-molten fibers onto the mold.
2. The three-dimensional non-woven fabric according to claim 1, wherein the
10 three-dimensional non-woven fabric is a filter having a filtering portion, and the filtering
portion includes a plurality of wave-shaped portions, with the at least one second portion
crossing the wave-shaped portions.
3. The three-dimensional non-woven fabric according to claim 1, wherein a
plurality of columnar portions formed by the at least one second portion are connected to
each other.
4. The three-dimensional non-woven fabric according to claim 3, wherein the
plurality of columnar portions have a taper formed by the at least one second portion.
5. The three-dimensional non-woven fabric according to claim 4, wherein each
of the plurality of columnar portions has a sidewall and the plurality of columnar portions are
connected to each other with their sidewalls shared with each other.
6. The three-dimensional non-woven fabric according to claim 3, wherein each
of the plurality of columnar portions has a sidewall and the plurality of columnar portions are
connected to each other with their sidewalls shared with each other.
7. The three-dimensional non-woven fabric according to claim 3, wherein each
25 of the plurality of columnar portions has an opening and the plurality of columnar portions
are connected to each other at peripheral edges of the openings.
8. The three-dimensional non-woven fabric according to claim 3, wherein the
plurality of columnar portions are formed by the at least one second portion as columnar
portions having one respective end closed, and the columnar portions are connected to each
30 other so that opening sides and closed sides of adjacent columnar portions are located
opposite to each other.
9. A method for manufacturing a three-dimensional non-woven fabric,
comprising:
preparing a mold including a portion from which fibers are hanged; and

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spinning semi-molten fibers onto the mold so that the semi-molten fibers hang down from the portion of the mold to form a hanging fiber wall.

10. The method according to claim 9, wherein

the mold includes a plurality of closed loops connected to each other; and

the semi-molten fibers are spun onto the plurality of closed loops to hang therefrom, wherein the hanging fiber wall is formed as a plurality of columnar hanging fiber walls connected to each other.

11. The method according to claim 10, wherein the mold, including the plurality of closed loops, is a mesh-like member.

12. The method according to claim 10, wherein the mold, including the plurality of closed loops, includes a first plate member having a plurality of openings.

13. The method according to claim 12, further comprising arranging a second plate member, that has openings smaller than the openings of the first plate member, under the first plate member, so that the first plate member and the second plate member do not contact each other and so that the respective openings are arranged substantially coaxially.

14. The method according to claim 11, wherein a height of the hanging fiber wall is adjusted by adjusting a spinning rate of the semi-molten fibers.

15. A filter manufactured by the method according to claim 9.

16. A mold for manufacturing a three-dimensional non-woven fabric, comprising:
a member from which semi-molten fibers are hanged; and
a forming portion onto which a main body of the three-dimensional non-woven fabric is formed from spun semi-molten fibers.

17. A filter manufactured by the mold according to claim 16.

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